

## To the fauna of Carnidae (Diptera) of Asia

## К фауне двукрылых семейства Carnidae (Diptera) Азии

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КЛЮЧЕВЫЕ СЛОВА: Diptera, Carnidae, *Hemeromyia*, *Meoneura*, новый вид, новый синоним, новые находки, Азия, Туркмения.

ABSTRACT. New data on the flies from the family Carnidae of Asia are given. The genus *Hemeromyia* Coquillett, 1902 is registered in Turkmenistan for the first time. Two species *Hemeromyia humeralis* and *Hemeromyia leucoptera* are described as new to science. Key to species of *Hemeromyia* of Asia is composed. One new synonym is proposed: *Meoneura stepposa* Ozerov, 1994 = *Meoneura kerzhneri* Ozerov, 2011, **syn.n.**

РЕЗЮМЕ. Приведены новые данные о двукрылых семейства Carnidae фауны Азии. Род *Hemeromyia* Coquillett, 1902 впервые отмечен в Туркмении. Два вида, *Hemeromyia humeralis* и *Hemeromyia leucoptera*, описаны как новые для науки. Приведена определительная таблица видов рода *Hemeromyia* Азии. Установлен один новый синоним: *Meoneura stepposa* Ozerov, 1994 = *Meoneura kerzhneri* Ozerov, 2011, **syn.n.**

### Introduction

Carnidae are small-sized (1–3 mm) black flies, otherwise known as bird flies or filth flies. They are a small family of acalyptrate flies with more than 120 species worldwide [Brake, 2011; Ozerov, 2011; Ozerov, Krivosheina, 2013, 2014; Papp, 2013; Stuke, 2016a, b, 2017; Stuke, Bachli, 2015; Stuke, Freidberg, 2017; Stuke, Tago, 2017]. Five genera are known in the World, three genera of them — *Carnus* Nitzsch, 1818, *Hemeromyia* Coquillett, 1902 and *Me-*

*oneura* Rondani, 1856, are known in Asia. At the present time fauna of Carnidae of Asia includes about 20 species of the genus *Meoneura*, two species of the genus *Carnus* (*C. hemapterus* Nitzsch, 1818, widespread in Holarctic, also in India and *C. orientalis* Maa, 1968 from Malaysia) and only one species of *Hemeromyia*: *H. afghanica* Papp, 1979, described from Afghanistan [Papp, 1979, 2013; Brake, 2011; Ozerov, Krivosheina, 2013, 2014; Stuke, Barták, 2019].

Adults of many of Carnidae genera are usually found on carrion, various kinds of dung, on human feces, on inflorescence of Apiaceae and some other flowers, in bird's nests, some species in feathers of birds [Papp, 1998]. Habits of the majority of the species have not been determined yet possibly due to their similarity to several other common alyptates; as a result true representatives of Carnidae are recognized only by experts and are easily overlooked in samples [Stuke, Freidberg, 2017].

Larvae of Carnidae are saprophagous in various substrata, among them *Meoneura* larvae, different species of which are known from damaged puparium of *Sarcophaga* sp., stem of *Ferula* sp., bird's nest, fungus *Leccinium*, cattle, chicken and pig dung, salted fish and plant remains [Ferrari, 1987]. The close habits are known for *Carnus*, developing in bird's nests. As for the genus *Hemeromyia* the biology of the only species, *H. washingtona* (Melander, 1913), breeding in nest of the rodent *Peromyscus* sp., is known [Ferrari, 1987].

The imagoes of *Hemeromyia* resemble those of the genus *Meoneura* greatly, and differ from them in the



Fig. 1. *Hemeromyia leucoptera* sp.n., holotype male.  
 Рис. 1. *Hemeromyia leucoptera* sp.n., голотип самец.

following features: 1) wing with cell dm long, 2) crossveins r-m and dm-cu widely separated, 3) costal vein extending to vein  $M_1$ , 4) cell cup closed, 5) vein  $A_1+CuA_2$  strong (Fig. 1). The species of *Meoneura* are characterized by wing with cell dm short, crossveins r-m and dm-cu narrowly separated; costal vein ending at  $R_{4+5}$ ; cell cup open; vein  $A_1+CuA_2$  weak, streak-like.

The present work gives the descriptions of two new to science species of *Hemeromyia* from Turkmenistan which were found after examination of the material from the collection of Carnidae in the Zoological Museum, Moscow University (ZMUM).

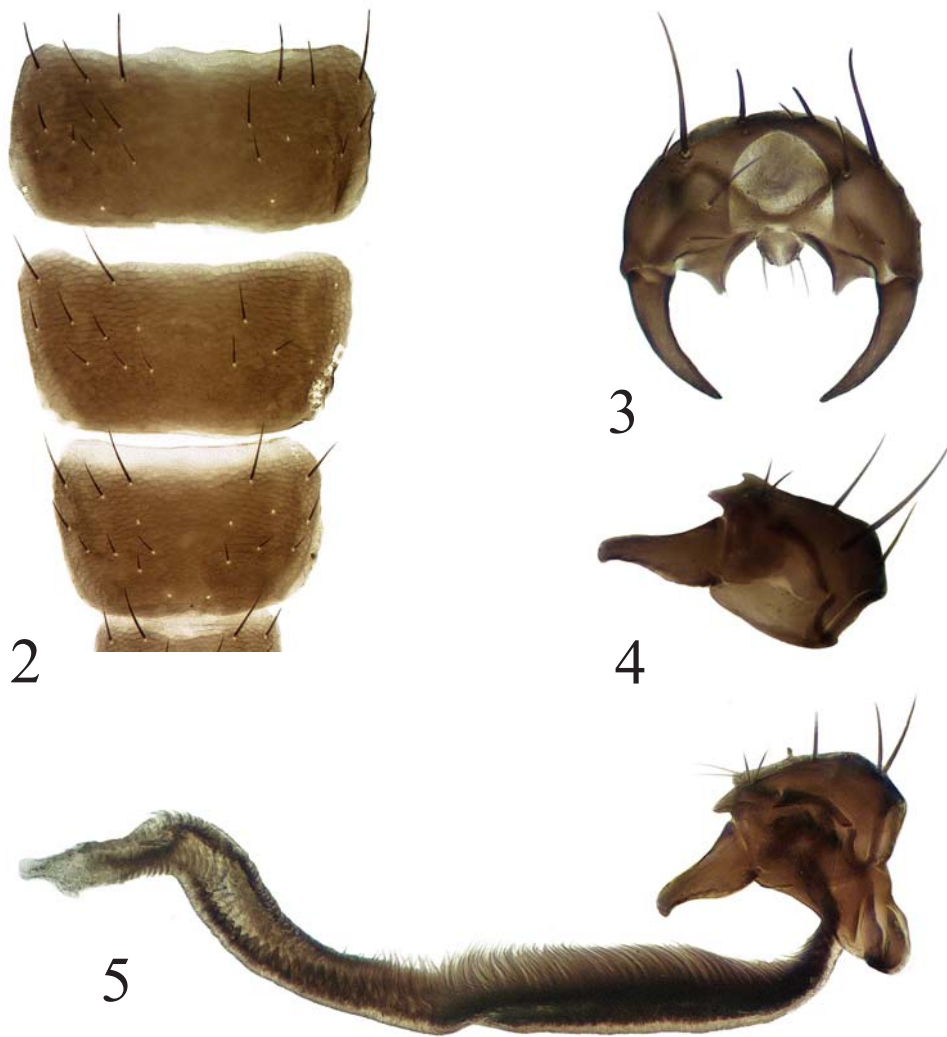
In addition we inform about one new synonym from the genus *Meoneura*.

## Material and methods

The specimens examined for this study are deposited in the Zoological Museum, Moscow State University, Russia (ZMUM) and Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia (ZISP).

The holotype and paratypes of the new species are deposited in the collection of the Zoological Museum of Moscow State University (ZMUM).

The terminology used in the generic and species descriptions follows McAlpine [1981] and Stuckenberg [1999 (postpedicel)].



Figs 2–5. *Hemeromyia leucoptera* sp.n.: 1 — male sternites 3, 4 and 5 (upper); 3 — epandrium, cerci and surstyli, dorsal view; 4 — same, lateral view; 5 — epandrium, cerci, surstyli and aedeagus, lateral view.

Рис. 2–5. *Hemeromyia leucoptera* sp.n.: 2 — стерниты 3, 4 и 5 (вверху) самца; 3 — эпандрий, церки и сурстили, сверху; 4 — то же, сбоку; 5 — эпандрий, церки, сурстили и эдеагус, сбоку.

Dissected male genitalia were examined with a Nikon SMZ645 zoom stereomicroscope and then photographed using an eTREK DCM900 digital camera attached in place of an eyepiece of monocular microscope. Resulting batches of images were processed with CombineZP software, editing of stacked images was performed in Adobe Photoshop.

### Taxonomic part

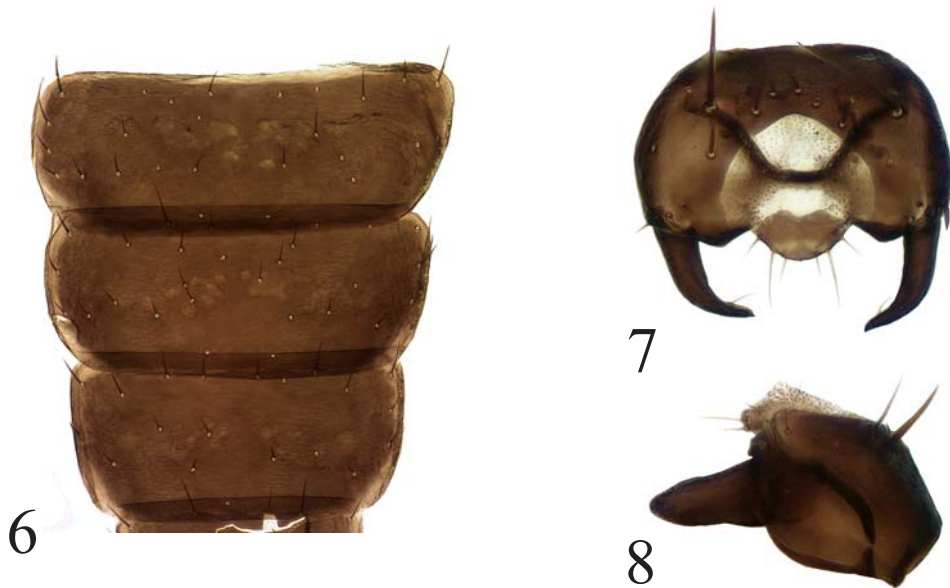
*Hemeromyia leucoptera* Ozerov et Krivosheina, **sp.n.**  
Figs 1–5.

**MATERIAL.** Holotype ♂, Turkmenistan: Repetek (38.563°N 63.178°E), 16.IV.1990, A.L. Ozerov (ZMUM). Paratypes 55 ♂♂, 18 ♀♀, same labels as holotype, 14–18.IV.1990, 4 and 12.V.1990 (ZMUM).

**DESCRIPTION.** Male (Fig. 1). Female. Length of body 1.6–2.1 mm.

**Head.** Frontal vitta and fronto-orbital plate subshining; frontal triangle black, shining, reaching anteriorly about half of distance from anterior ocellus to frontal margin; face black; gena and postcranium black, subshining. Height of gena below eye approximately 1/3 times as long as vertical diameter of eye. Setae: 2 orbitals, 2 frontals, 1 short ocellar, 1 short convergent postocellar, 1 inner vertical, 1 outer vertical; gena with three pairs of setae, including vibrissa. Antenna black; postpedicel circular in lateral view; arista black, bare. Palpus black, filiform.

**Thorax** completely black, subshining. Acrostichals absent, 4 dorsocentrals, no intra-alars, 2 supra-alars (presutural seta present), 1 postpronotal, 2 notopleu-



Figs 6–8. *Hemeromyia humeralis* sp.n.: 6 — male sternites 3, 4 and 5 (upper); 7 — epandrium, cerci and surstyli, dorsal view; 8 — same, lateral view.

Рис. 6–8. *Hemeromyia humeralis* sp.n.: 6 — стерниты 3, 4 и 5 (вверху) самца; 7 — эпандрий, церки и сурстили, сверху; 8 — то же, сбоку.

rals and 2 postalars. Anepisternum with 1 seta in upper posterior corner and 1 strong seta near lower border. Katepisternum with 1 strong long seta near upper border. Scutellum black, subshining, with a pair of strong basal scutellar and a pair of strong apical scutellar setae.

*Legs* black in ground colour, but fore tibia, apexes of mid and hind tibiae and tarsi yellowish. Fore femur apically with 2 strong posteroventral setae. Mid femur with a row of anterior setae in apical half. Hind femur apically with 1 strong anteroventral seta.

*Wing* whitish with whitish yellow veins. Halter whitish or yellowish.

*Abdomen* black, subshining. Male sternites 3–5 transverse, sternite 5 1/2 times as long as wide (Fig. 2); epandrium with short conical protuberances, surstyli narrow pointed (Fig. 3), curved at the most apex in lateral view (Fig. 4). Aedeagus long and thin, covered with dense hairs dorsally (Fig. 5).

REMARK. The specimens of this species were collected on the flowers and the trunk of *Tamarix* sp.

DISTRIBUTION. Turkmenistan.

*Hemeromyia humeralis* Ozerov et Krivosheina, sp.n.  
Figs 6–8.

MATERIAL. Holotype ♂, Turkmenistan: Repetek (38.563°N 63.178°E), 15.IV.1990, A.L. Ozerov (ZMUM). Paratypes 9 ♂♂, 17 ♀♀, same labels as holotype, 15, 16 and 20.IV.1990, 4 and 12.V.1990 (ZMUM).

DESCRIPTION. Male. Female. Length of body 1.6–2.4 mm.

*Head*. Frontal vitta and fronto-orbital plate velvety-black; frontal triangle black, shining, reaching anteri-

only two-thirds of distance from anterior ocellus to frontal margin; face black; gena and postcranium black, subshining. Height of gena below eye approximately 1/3 times as long as vertical diameter of eye. Setae: 1 orbital, 2 frontals, 1 short ocellar, 1 short convergent postocellar, 1 inner vertical, 1 outer vertical; gena with three pairs of setae, including vibrissa. Antenna black; postpedicel circular in lateral view; arista black, bare. Palpus black, filiform.

*Thorax* completely black, subshining. Acrostichals absent, 4 dorsocentrals, no intra-alars, 1 supra-alar (post-sutural), 1 postpronotal, 2 notopleurals and 2 postalars. Anepisternum with few hairs in middle part, also with 1 seta in upper posterior corner and 1 strong seta near lower border. Katepisternum with 1 strong long seta near upper border. Scutellum black, subshining, with a pair of strong basal scutellar and a pair of strong apical scutellar setae.

*Legs* black in ground colour, only tarsi from dark brown to yellowish. Fore femur apically with 2 strong posteroventral setae. Mid femur with a row of anterior setae in apical half. Hind femur apically with 1 strong anteroventral seta.

*Wing* with brownish tinge; veins brownish. Halter whitish.

*Abdomen* black, subshining. Male sternites 3–5 transverse, sternite 5 about 1/3 times as long as wide (Fig. 6); epandrium with low conical protuberances, surstyli moderately narrow, curved at the most apex (Fig. 7), straight in lateral view (Fig. 8). Aedeagus long and thin, of the same type as in previous species.

DISTRIBUTION. Turkmenistan.

KEY TO THE SPECIES OF *HEMEROMYIA* COQUILLET OF ASIA

1. One orbital seta present, presutural supra-alar seta lacking; postpronotal conical, strongly projecting laterally .....  
 ..... *Hemeromyia humeralis* **sp.n.**  
 – Two orbital setae present, presutural supra-alar seta present; postpronotal not conical, rounded at most moderately projecting laterally ..... 2  
 2. Tarsi brownish black, concolorous with remaining parts of legs ..... *Hemeromyia afghanica* Papp  
 – At least tarsi of mid and hind legs yellow, contrasted with remaining blackish parts of legs .....  
 ..... *Hemeromyia leucoptera* **sp.n.**

*Meoneura stepposa* Ozerov, 1994

*stepposa* Ozerov, 1994: 140 (*Meoneura*). Type-locality: Mt Kokshe-Tau (Kazakhstan).

*kerzhneri* Ozerov, 2011: 3 (*Meoneura*). Type-locality: “Central Aimak, environs of Nalaych” (Mongolia) — **syn.n.**

During the comparison of the holotype of *M. stepposa* with the holotype of *M. kerzhneri* it was discovered that they are conspecific. So, we consider name *kerzhneri* as a junior synonym of *stepposa*.

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